

AD-A046 073

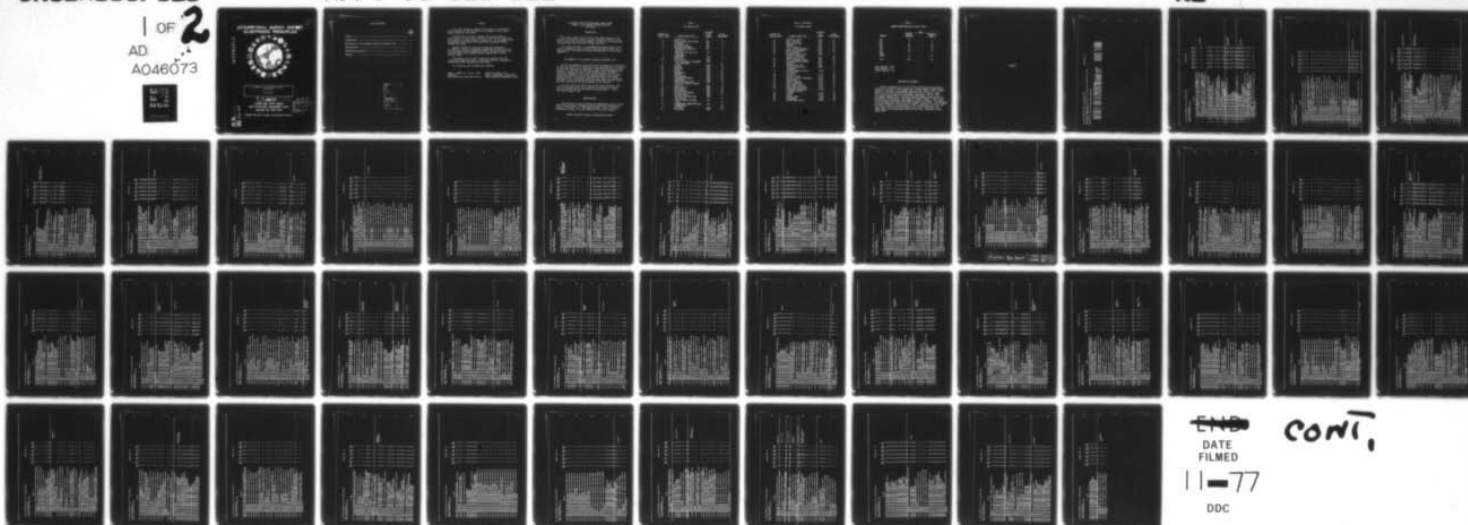
AIR FORCE OCCUPATIONAL MEASUREMENT CENTER LACKLAND A--ETC F/6 5/9
AUTOMATIC FLIGHT CONTROL SYSTEMS SPECIALIST AFSC-32550.(U)
SEP 77

UNCLASSIFIED

AFPT 90-325-222

NL

1 OF 2
AD
A046073



~~END~~
DATE
FILMED
11-77
DDC

CONT.

607

AD A 046073

9 **OCCUPATIONAL SURVEY REPORT.** 2
ELECTRONIC PRINCIPLES



6 **AUTOMATIC FLIGHT CONTROL SYSTEMS
SPECIALIST**

AFSC- 32550 ,

14 AFPT 90-325-222

11 22 Sep 1977

OCCUPATIONAL SURVEY BRANCH

✓ **USAF OCCUPATIONAL MEASUREMENT CENTER**

LACKLAND AFB TEXAS 78236

DDC

RECEIVED
NOV 4 1977
RECEIVED
B

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

AD No. _____
DDC FILE COPY

408 889

mt

TABLE OF CONTENTS

	PAGE NUMBER
PREFACE -----	2
INTRODUCTION -----	3
DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI) -----	3
ADMINISTRATION -----	3
PRESENTATION OF RESULTS -----	6
APPENDIX -----	7

ACCESSION for		
NTIS	Whole Section	<input checked="" type="checkbox"/>
DDC	B.C. Section	<input type="checkbox"/>
UNANNOUNCED		<input type="checkbox"/>
BY		
DISTRIBUTION/AMPLITUDE TO IS		
Dist. AVAILABLE and/or SPECIAL		
A		

PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Automatic Flight Control Systems Specialist, AFSC 32550.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Captain Frederick B. Bower, Jr. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
USAF Occupational Measurement Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement Center

ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT
AUTOMATIC FLIGHT CONTROL SYSTEMS SPECIALIST
AFSC 32550

INTRODUCTION

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Automatic Flight Control Systems Specialist (AFSC 32550). The data for this report were collected during the period April through June 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands.

DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 32550 airmen worldwide. Responses from 212 individuals represented 20 percent of the total of all AFSC 32550 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

TABLE 1
EPI SUBJECT AREAS

SEQUENCE OF SUBJECT AREAS	SUBJECT AREA TITLE	BEGINNING ITEM NUMBER	GPSUM PAGE NUMBER
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C128	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E295	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	O845	30
44	PULSE MODULATION SYSTEMS	O875	31
45	ANTENNAS	O914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

(CONTINUED) **TABLE 2**
COMMAND REPRESENTATION OF SURVEY SAMPLE

<u>COMMAND</u>	<u>32550</u>	
	<u>PERCENT ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
ADC	1	1
ATC	3	3
LOG	1	0
MAC	29	34
SAC	29	34
AFSC	2	2
TAC	22	22
AAC	1	1
USAFE	7	3
PACAF	5	0
TOTAL	100	100

Total Assigned - 1072
Total Sampled - 212
Percent Sampled - 20%

PRESENTATION OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the four selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Resistance (p. 23) and Soldering (pp. 11-12) to low in areas such as Infrared and Lasers (pp. 41-43). Additional AFSC 325X0 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).

APPENDIX

PCT MGRS RESPONDING 'YES' BY SELECTED GRPS

GROUPS PAGE 1

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS
IN THE 32500 CAREER FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY = SPC076	ALL AIRMEN DAFSC 32550	CONTAINING	212 MEMBERS.
GROUP IDENTITY = SPC077	ALL AIRMEN DAFSC 32550 STATIONED IN CONUS	CONTAINING	170 MEMBERS.
GROUP IDENTITY = SPC078	ALL AIRMEN DAFSC 32550 STATIONED OVERSEAS	CONTAINING	42 MEMBERS.
GROUP IDENTITY = SPC079	ALL AIRMEN DAFSC 32550 ASSIGNED TO SAC	CONTAINING	41 MEMBERS.
GROUP IDENTITY = SPC080	ALL ALL AMN DAFSC 32550 ASSIGNED TO TAC	CONTAINING	38 MEMBERS.
GROUP IDENTITY = SPC081	ALL ALL AMN DAFSC 32550 ASSIGNED TO MAC	CONTAINING	76 MEMBERS.

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

A 1 A1-01 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10.

MATHEMATICS

A 2 A1-02 DO YOU USE PUBLICATIONS, SUCH AS A TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB.

A 3 A1-03 DO YOU REARRANGE AND SOLVE FORMULAS OR EQUATIONS.

A 4 A1-04 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY.

A 5 A1-05 DO YOU SOLVE FOR UNKNOWN QUANTITIES.

A 6 A1-06 DO YOU CONVERT NUMBERS TO LOGARITHMS.

A 7 A1-07 DO YOU USE LOGARITHM TABLES IN ANY TYPE OF CALCULATIONS.

A 8 A1-08 DO YOU SOLVE QUADRATIC EQUATIONS.

A 9 A1-09 DO YOU USE THE NATURAL SYSTEM OF LOGARITHMS.

A 10 A1-10 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES.

A 11 A1-11 DO YOU WORK WITH TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT.

A 12 A1-12 DO YOU DETERMINE AREAS OF PLANE FIGURES.

A 13 A1-13 DO YOU SOLVE OR USE SIMULTANEOUS EQUATIONS.

A 14 A1-14 DO YOU SOLVE OR USE PROPORTIONS.

A 15 A2-01 DO YOU USE THE TERM VOLTAGE OR VOLT (V).

A 16 A2-02 DO YOU USE THE TERM ELECTROMOTIVE FORCE (EMF).

A 17 A2-03 DO YOU USE THE TERM OHM.

A 18 A2-04 DO YOU USE THE TERM ION.

A 19 A2-05 DO YOU USE THE TERM DYNE.

A 20 A2-06 DO YOU USE THE TERM AMPERE.

A 21 A2-07 DO YOU USE THE TERM NEUTRON.

A 22 A2-08 DO YOU USE THE TERM COULOMB.

A 23 A2-09 DO YOU USE THE TERM PROTON.

A 24 A3-01 DO YOU WORK WITH RESISTORS IN YOUR PRESENT JOB.

A 25 A3-02 DO YOU INSPECT RESISTORS.

A 26 A3-03 DO YOU CLEAN RESISTORS.

A 27 A3-04 DO YOU ADJUST RESISTORS.

A 28 A3-05 DO YOU CHECK OHMIC VALUE OR RESISTORS.

A 29 A3-06 DO YOU REMOVE OR REPLACE RESISTORS.

A 30 A3-07 DO YOU USE OR REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASKS YOU PERFORM.

A 31 A3-08 DO YOU USE OR REFER TO RESISTOR SYMBOLS SUCH AS FIXED

RESISTOR SYMBOLS OR TAPPED RESISTOR SYMBOLS.

A 32 A3-09 DO YOU IDENTIFY OR CLASSIFY THE RESISTORS YOU WORK

WITH AS CARBON, FIXED WIRE, SLIDE TAP, RHEOSTAT, OR

POTENTIOMETER.

A 33 A3-10 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC

VALUE OF RESISTANCE.

DIRECT CURRENT
AND VOLTAGE

RESISTANCE

PCT MORE RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUMS PAGE 3

DY-TSK

A 34 A3-11 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE.
A 35 A3-12 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE.
A 36 A3-13 DO YOU MAKE DECISIONS IN WHICH YOU MUST DETERMINE HOW TWO OR MORE BATTERIES MUST BE CONNECTED TOGETHER TO ACHIEVE A SPECIFIC VOLTAGE.
A 37 A3-14 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES
A 38 A3-15 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES RESISTIVE CIRCUITS.
A 39 A3-16 DO YOU CALCULATE TOTAL CURRENT FOR SERIES RESISTIVE CIRCUITS.
A 40 A3-17 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES RESISTIVE CIRCUITS.
A 41 A3-18 DO YOU CALCULATE POWER DISSIPATION FOR SERIES RESISTIVE CIRCUITS.
A 42 A3-19 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES PARALLEL RESISTIVE CIRCUITS.
A 43 A3-20 DO YOU CALCULATE TOTAL CURRENT FOR SERIES PARALLEL RESISTIVE CIRCUITS.
A 44 A3-21 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES PARALLEL RESISTIVE CIRCUITS.
A 45 A3-22 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR SERIES PARALLEL RESISTIVE CIRCUITS.
A 46 A3-23 DO YOU CALCULATE POWER DISSIPATION FOR SERIES PARALLEL RESISTIVE CIRCUITS.
A 47 A3-24 DO YOU CALCULATE TOTAL RESISTANCE FOR PARALLEL RESISTIVE CIRCUITS.
A 48 A3-25 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RESISTIVE CIRCUITS.
A 49 A3-26 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR PARALLEL RESISTIVE CIRCUITS.
A 50 A3-27 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR PARALLEL RESISTIVE CIRCUITS.
A 51 A3-28 DO YOU CALCULATE POWER DISSIPATION FOR PARALLEL RESISTIVE CIRCUITS.
B 52 B1-01 DO YOU MEASURE RESISTANCE.
B 53 B1-02 DO YOU REPAIR OHMMETERS.
B 54 B1-03 DO YOU MEASURE VOLTAGE.
B 55 B1-04 DO YOU REPAIR VOLTMETERS.
B 56 B1-05 DO YOU REPAIR AMMETERS.
B 57 B1-06 DO YOU MEASURE CURRENT.
B 58 B1-07 DO YOU USE MULTIMETERS.
B 59 B1-08 DO YOU DIRECTLY USE A QUANTITY OF CHARGE CALLED A COULOMB.
B 60 B1-09 DO YOU READ SCHEMATICS.

SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
076	077	078	079	080	081	082	083	084	085
64	65	67	61	63	69				
15	16	7	15	16	12				
16	16	12	18	11	12				
87	87	86	90	89	80				
24	22	29	26	18	17				
18	17	24	18	13	16				
20	21	19	26	18	13				
13	15	7	21	13	8				
21	21	24	26	13	14				
17	16	19	16	13	13				
19	21	14	28	16	12				
15	15	12	21	11	9				
13	15	5	21	11	8				
19	18	24	20	16	17				
17	15	21	18	13	14				
17	17	19	20	18	13				
14	15	12	21	13	8				
12	13	7	16	13	9				
95	94	100	93	97	95				
9	10	7	18	11	1				
97	96	100	97	95	97				
6	9	5	13	11	1				
4	5	0	8	5	1				
75	78	64	82	84	70				
97	96	100	97	97	97				
0	1	0	2	0	0				
97	96	100	97	97	97				

MULTIMETER USES

PCT MEMRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

APSUMS PAGE 4

BY-TSK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081	ALTERNATING CURRENT
6 61 82-01 DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS).	52	52	55	67	95	92	
6 62 82-02 DO YOU USE OR REFER TO THE TERM PEAK TO PEAK VOLTAGE.	42	45	48	77	95	59	
6 63 82-03 DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	45	48	55	72	63	61	
6 64 82-04 DO YOU USE OR REFER TO THE TERM WAVE LENGTH.	34	37	21	46	21	38	
6 65 82-05 DO YOU USE OR REFER TO THE TERM FREQUENCY.	64	68	48	84	58	58	
6 66 82-06 DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	14	13	19	16	5	11	
6 67 83-01 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKER COILS IN YOUR PRESENT JOB.	34	32	40	43	24	25	
6 68 83-02 DO YOU INSPECT INDUCTORS.	31	28	40	41	13	20	INDUCTORS AND INDUCTIVE REACTANCE
6 69 83-03 DO YOU CLEAN INDUCTORS.	20	20	19	23	13	14	
6 70 83-04 DO YOU ADJUST INDUCTORS.	14	16	5	26	11	4	
6 71 83-05 DO YOU REMOVE OR REPLACE INDUCTORS.	24	23	26	30	13	17	
6 72 83-06 DO YOU USE OR REFER TO INDUCTANCE.	19	20	17	30	8	13	
6 73 83-07 DO YOU USE OR REFER TO HENRIES.	9	10	5	8	5	7	
6 74 83-08 DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	12	14	7	16	5	9	
6 75 83-09 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	1	1	0	0	0	0	
6 76 83-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	3	4	0	5	0	1	
6 77 83-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS.	3	4	0	5	0	0	
6 78 83-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	2	3	0	3	0	0	
6 79 83-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	2	2	0	3	0	1	
6 80 83-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.	4	5	0	5	0	3	
6 81 83-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	3	4	0	7	0	1	
6 82 83-16 DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	2	2	0	3	0	0	
6 83 83-17 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	2	2	2	2	0	3	
6 84 83-18 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	3	3	2	3	0	3	
6 85 83-19 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	2	2	2	2	0	3	
6 86 83-20 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	15	15	12	23	0	12	
6 87 83-21 DO YOU CALCULATE INDUCTIVE REACTANCE.	3	4	2	0	0	5	
6 88 83-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	4	5	7	8	0	5	
6 89 83-23 DO YOU WORK WITH POWER INDUCTORS.	19	19	19	30	8	12	
6 90 83-24 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	5	5	7	7	0	7	
6 91 83-25 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	5	4	7	7	0	5	

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUMS PAGE 5

DY-TSK

CAPACITORS AND
CAPACITIVE REACTANCE

C 92 CI-01 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING
CAPACITORS IN YOUR PRESENT JOB.
C 93 CI-02 DO YOU INSPECT CAPACITORS.
C 94 CI-03 DO YOU CLEAN CAPACITORS.
C 95 CI-04 DO YOU ADJUST CAPACITORS.
C 96 CI-05 DO YOU TEST CAPACITORS.
C 97 CI-06 DO YOU DISCHARGE CAPACITORS.
C 98 CI-07 DO YOU REMOVE OR REPLACE CAPACITORS.
C 99 CI-08 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE.
C 100 CI-09 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN
A DIELECTRIC.
C 101 CI-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR
PICOFARADS.
C 102 CI-11 DO YOU USE OR REFER TO CAPACITANCE.
C 103 CI-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT
C 104 CI-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF
CAPACITORS
C 105 CI-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE
C 106 CI-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES
C 107 CI-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS
C 108 CI-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS
C 109 CI-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC
AND AC
C 110 CI-19 DO YOU WORK WITH CAPACITORS IN DON'T REMEMBER WHICH
CIRCUITS
C 111 CI-20 DO YOU CALCULATE CAPACITANCE FOR PARTICULAR
CAPACITORS USING FORMULAS
C 112 CI-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT
CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE
DIELECTRIC CONSTANT
C 113 CI-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT
CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO
THE DIELECTRIC THICKNESS
C 114 CI-23 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS
IN SERIES
C 115 CI-24 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS
IN PARALLEL
C 116 CI-25 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS
IN SERIES-PARALLEL CIRCUITS
C 117 CI-26 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT
DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO
C 118 CI-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT
LEADS VOLTAGE IN AC CAPACITOR CIRCUITS
C 119 CI-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT
CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO
FREQUENCY
C 120 CI-29 DO YOU CALCULATE CAPACITIVE REACTANCE

SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
72	72	69	85	84	46
76	77	71	95	87	47
53	56	40	74	58	34
18	20	12	23	24	12
54	56	55	57	79	32
43	44	40	52	47	21
64	66	64	79	87	34
5	4	2	10	5	1
1	1	0	0	3	0
50	52	40	54	61	33
56	58	50	69	55	34
3	4	0	5	5	1
31	29	38	31	37	13
18	21	10	20	18	14
19	19	19	15	32	9
71	74	62	85	84	43
73	74	67	85	89	46
46	46	64	80	74	43
15	14	17	18	18	7
2	2	0	0	5	1
2	2	0	3	3	0
1	1	0	0	3	0
6	6	2	5	8	1
6	6	5	5	8	3
5	5	2	2	8	1
19	19	19	26	21	8
20	20	19	26	8	11
8	9	0	10	5	5
4	5	2	2	8	3

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

OPSUNS PAGE 6

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		BY-JEK																			
		SPC		SPC		SPC		SPC		SPC		SPC		SPC		SPC		SPC		SPC	
		076		077		078		079		080		081		082		083		084		085	
C 121 C1-20 DO YOU WORK WITH ROTOR-STATOR (VARIABLE) CAPACITORS		17		18		12		33		16		7									
C 122 C1-31 DO YOU WORK WITH COMPRESSION (TRIMMER) CAPACITORS		8		9		5		13		11		0									
C 123 C1-32 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS		59		59		62		78		74		33									
C 124 C1-33 DO YOU WORK WITH PAPER (FIXED) CAPACITORS		53		50		64		62		63		29									
C 125 C1-34 DO YOU WORK WITH MICA (FIXED) CAPACITORS		48		48		50		57		61		30									
C 126 C1-35 DO YOU WORK WITH CERAMIC (FIXED) CAPACITORS		54		54		57		66		63		32									
C 127 C1-36 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF CAPACITORS		22		24		17		23		26		18									
C 128 C2-01 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB		68		63		71		79		71		38									
C 129 C2-02 DO YOU INSPECT TRANSFORMERS		45		45		64		79		74		41									
C 130 C2-03 DO YOU CLEAN TRANSFORMERS		45		46		90		87		39		32									
C 131 C2-04 DO YOU ADJUST TRANSFORMERS		22		25		12		38		26		12									
C 132 C2-05 DO YOU TROUBLESHOOT TRANSFORMERS		56		54		64		64		71		30									
C 133 C2-06 DO YOU REMOVE OR REPLACE COMPLETE TRANSFORMERS		64		62		69		74		76		38									
C 134 C2-07 DO YOU REMOVE OR REPLACE TRANSFORMER PARTS, SUCH AS THE PRIMARY WINDING		4		5		0		2		11		3									
C 135 C2-08 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTANCE AND MUTUAL INDUCTANCE (M)		2		2		2		0		3		1									
C 136 C2-09 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M		2		1		5		0		3		1									
C 137 C2-10 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS		2		2		2		3		3		0									
C 138 C2-11 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS		4		4		2		2		0		5									
C 139 C2-12 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS		4		4		5		3		0		3									
C 140 C2-13 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS		2		2		5		0		3		0									
C 141 C2-14 DO YOU WORK WITH AUTOTRANSFORMERS		15		15		14		25		5		11									
C 142 C2-15 DO YOU WORK WITH POWER TRANSFORMERS		61		61		62		69		71		43									
C 143 C2-16 DO YOU WORK WITH AUDIO TRANSFORMERS		8		6		17		8		3		8									
C 144 C2-17 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS		7		8		2		13		3		4									
C 145 C2-18 DO YOU WORK WITH DON'T REMEMBER WHAT TYPE OF TRANSFORMERS		17		17		17		20		18		13									
C 146 C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE		55		52		64		56		71		30									
C 147 C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE		52		49		64		52		71		29									
C 148 C2-21 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGES		49		47		57		54		61		30									
C 149 C2-22 DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO		10		10		12		8		11		11									
C 150 C2-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO		15		14		19		15		13		12									
C 151 C2-24 DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS FOR TRANSFORMERS		59		58		64		70		63		37									

TRANSFORMERS

PCT MBSR RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 7

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

0Y-7SK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
C 152 C3-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS	41	41	40	44	45	28
C 153 C3-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	43	41	50	41	50	28
C 154 C3-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	52	49	62	52	58	34
C 155 C3-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	21	19	29	28	24	17
C 156 C3-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	28	26	36	31	26	22
C 157 C3-30 DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS	40	37	52	44	45	26
C 158 C3-31 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS	17	17	14	23	13	9
C 159 C3-32 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH	8	7	10	5	13	5
C 160 C3-33 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO	7	8	5	7	13	3
C 161 C3-34 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS	18	18	19	21	18	11
C 162 C3-35 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS	2	2	2	3	3	1
C 163 C3-36 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS	2	2	0	3	3	0
C 164 C3-37 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS	41	41	40	48	58	20
C 165 C3-38 DO YOU INSPECT THREE PHASE TRANSFORMERS	38	37	40	46	50	13
C 166 C3-39 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS	17	18	17	20	18	9
C 167 C3-40 DO YOU ADJUST THREE PHASE TRANSFORMERS	8	8	7	16	8	1
C 168 C3-41 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS	32	29	43	36	47	11
C 169 C3-42 DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS	36	35	40	44	53	11
C 170 C3-43 DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS WINDINGS	1	2	0	2	3	1
C 171 C3-01 DO YOU USE OR REFER TO PERMANENT MAGNETS	38	37	40	59	8	34
C 172 C3-02 DO YOU USE OR REFER TO TEMPORARY MAGNETS	22	23	19	36	8	16
C 173 C3-03 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS	12	12	12	13	5	14
C 174 C3-04 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS	13	14	10	15	5	16
C 175 C3-05 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS	17	16	19	21	3	21
C 176 C3-06 DO YOU USE OR REFER TO RESIDUAL MAGNETISM	16	16	17	23	3	16
C 177 C3-07 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX	65	62	74	79	24	76
C 178 C3-08 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	6	5	10	10	3	7

MAGNETISM

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 8

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

C 179 C3-09 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM
C 180 C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION
C 181 C3-11 DO YOU USE OR REFER TO FLUX DENSITY
C 182 C3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR
MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT
C 183 C3-13 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE
DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES
C 184 C3-14 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH
POLE OF A CURRENT CARRYING COIL
D 185 D1-01 DO YOU WORK WITH RC, LR, RCL CIRCUITS IN YOUR
PRESENT JOB
D 186 D1-02 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL
CIRCUITS
D 187 D1-03 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN
WORKING WITH RCL CIRCUITS
D 188 D1-04 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL
CIRCUITS
D 189 D1-05 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL
CIRCUITS
D 190 D1-06 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL
CIRCUITS
D 191 D1-07 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL
CIRCUITS
D 192 D1-08 DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING
WITH RCL CIRCUITS
D 193 D1-09 DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN
WORKING WITH RCL CIRCUITS
D 194 D1-10 DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN
WORKING WITH RCL CIRCUITS
D 195 D1-11 DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN
WORKING WITH RCL CIRCUITS
D 196 D1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING
WITH RCL CIRCUITS
D 197 D1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN
WORKING WITH RCL CIRCUITS
D 198 D1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH
RCL CIRCUITS
D 199 D1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH
RCL CIRCUITS
D 200 D1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN
WORKING WITH RCL CIRCUITS
D 201 D1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN
WORKING WITH RCL CIRCUITS
D 202 D1-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING
WITH RCL CIRCUITS
D 203 D1-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH
RCL CIRCUITS

RCL CIRCUITS

PCT MBRS RESPONDING 'YES' BY SELECTED MBRS

GPSUNS PAGE 9

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
D 204 DI-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS	8	7	12	15	0	5
D 205 DI-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS	3	4	0	11	0	0
D 206 DI-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS	1	1	2	0	0	3
D 207 DI-23 DO YOU CALCULATE TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS	0	0	0	0	0	0
D 208 DI-24 DO YOU CALCULATE PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS	2	2	0	5	0	1
D 209 DI-25 DO YOU CALCULATE TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS	0	1	0	0	0	1
D 210 DI-26 DO YOU CALCULATE IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS	0	1	0	0	0	1
D 211 DI-27 DO YOU CALCULATE APPARENT POWER (PA) FOR SERIES RCL CIRCUITS	0	1	0	2	0	0
D 212 DI-28 DO YOU CALCULATE TRUE POWER (PT) FOR SERIES RCL CIRCUITS	1	1	0	3	0	0
D 213 DI-29 DO YOU CALCULATE POWER FACTORS (PF) FOR SERIES RCL CIRCUITS	0	0	2	0	0	1
D 214 DI-30 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RCL CIRCUITS	1	1	0	2	0	1
D 215 DI-31 DO YOU CALCULATE IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS	0	1	0	2	0	0
D 216 DI-32 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING THE ASSUMED VOLTAGE METHOD	1	1	2	2	0	1
D 217 DI-33 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING OHM'S LAW	1	1	2	2	0	1
D 218 DI-34 DO YOU CHECK CAPACITORS USING OHMMETERS	19	19	21	28	13	13
D 219 DI-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION	11	10	17	14	3	8
D 220 DI-36 DO YOU CHECK INDUCTORS USING OHMMETERS	15	14	19	26	5	8
D 221 DI-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION	9	9	12	16	3	7
D 222 DI-38 DO YOU USE OR REFER TO THE GENERAL RULE THAT $\theta = 0$, $PF = 1$, AND $PA = PT$ FOR RESONANT CIRCUITS	0	1	0	2	0	0
D 223 DI-39 DO YOU CALCULATE RESONANT FREQUENCIES FOR RCL CIRCUITS	1	1	0	2	0	1
D 224 DI-40 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS	3	3	2	8	0	1
D 225 DI-41 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS	2	2	2	7	0	1
D 226 DI-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 PERCENT OF THE PEAK CURRENT VALUE	3	4	0	11	0	0
D 227 DI-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO Q	1	1	0	3	0	0
D 228 DI-44 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS	2	2	2	5	0	3

PCT MORS RESPONDING 'YES' BY SELECTED GRPS

OPSUMS PAGE 10

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

01-79K

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)
D 229 02-01 DO YOU WORK WITH, USE, OR REFER TO SERIES OR PARALLEL RESONANT CIRCUITS OR TIME CONSTANTS	5	5	5	10	0	0	
D 230 02-02 DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS	5	5	5	10	0	0	
D 231 02-03 DO YOU WORK WITH, USE, OR REFER TO AVAILABLE VOLTAGE	3	3	5	3	0	1	
D 232 02-04 DO YOU WORK WITH, USE, OR REFER TO TRANSIENT INTERVALS	2	1	5	3	0	0	
D 233 02-05 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (TC)	1	1	0	3	0	0	
D 234 02-06 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS	0	0	0	0	0	0	
D 235 02-07 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS	0	1	0	0	0	0	
D 236 02-08 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS	0	0	0	0	0	0	
D 237 02-09 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES	0	0	0	0	0	0	
D 238 02-10 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS	0	1	0	2	0	0	
D 239 03-01 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB	33	31	45	33	29	26	FILTERS
D 240 03-02 DO YOU INSPECT FILTER CIRCUITS	27	24	38	28	21	20	
D 241 03-03 DO YOU CLEAN FILTER CIRCUITS	14	16	17	20	11	11	
D 242 03-04 DO YOU ALIGN OR ADJUST FILTER CIRCUITS	10	13	0	21	8	4	
D 243 03-05 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL	21	18	34	21	14	13	
D 244 03-06 DO YOU TROUBLESHOOT TO COMPONENT PARTS	21	19	31	28	13	13	
D 245 03-07 DO YOU REMOVE OR REPLACE THE COMPLETE FILTER CIRCUIT	25	22	33	25	21	21	
D 246 03-08 DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT PARTS	17	15	24	14	11	7	
D 247 03-09 DO YOU WORK WITH LOW PASS FILTERS	24	22	33	30	18	13	
D 248 03-10 DO YOU WORK WITH HIGH PASS FILTERS	25	22	33	30	24	13	
D 249 03-11 DO YOU WORK WITH BANDPASS FILTERS	13	14	10	21	11	8	
D 250 03-12 DO YOU WORK WITH BAND-REJECT FILTERS	10	11	5	16	11	9	
D 251 03-13 DON'T REMEMBER WHICH TYPE OF FILTER YOU WORK WITH	14	13	19	5	21	14	
D 252 03-14 DO YOU WORK WITH L-SECTION FILTER CONFIGURATION	10	9	17	18	5	4	
D 253 03-15 DO YOU WORK WITH T-SECTION FILTER CONFIGURATION	9	7	17	15	3	4	
D 254 03-16 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATION	8	7	14	10	5	5	
D 255 03-17 DON'T REMEMBER WHICH TYPE FILTER CONFIGURATION	17	15	24	10	18	13	
D 256 03-18 DO THE FILTERS YOU WORK WITH USE PARALLEL RESONANT CIRCUITS	10	10	10	20	8	13	
D 257 03-19 DO THE FILTERS YOU WORK WITH USE SERIES-PARALLEL CIRCUITS	13	12	14	21	8	5	
D 258 03-20 DO THE FILTERS YOU WORK WITH USE SERIES RESONANT CIRCUITS	10	11	7	10	11	3	

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 11

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

0 269 03-21 DON'T REMEMBER WHICH TYPE OF BASIC CIRCUIT
D 260 03-22 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE
CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC
FILTERS

E 261 E1-01 DO YOU WORK WITH COUPLING DEVICES IN YOUR PRESENT JOB
E 262 E1-02 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC
COUPLING

E 263 E1-03 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH
IMPEDANCE COUPLING
E 264 E1-04 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH
TRANSFORMER COUPLING

E 265 E1-05 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS
WHICH PERFORM RC COUPLING
E 266 E1-06 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS
WHICH PERFORM IMPEDANCE COUPLING
E 267 E1-07 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS
WHICH PERFORM TRANSFORMER COUPLING

E 268 E1-08 DO YOU WORK WITH DIRECTLY COUPLED CIRCUITS
E 269 E1-09 DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED
CIRCUITS

E 270 E1-10 DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED
CIRCUITS

E 271 E1-11 DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS
E 272 E1-12 DON'T REMEMBER WHICH TYPE OF COUPLING CIRCUITS

E 273 E2-01 IN YOUR PRESENT JOB, DO YOU PERFORM SOLDERING
TECHNIQUES OR INSPECT OR EVALUATE SOLDERED CONNECTIONS

E 274 E2-02 DO YOU SELECT TYPE OF SOLDER TO USE

E 275 E2-03 DO YOU ADD FLUX TO CONNECTIONS

E 276 E2-04 DO YOU CLEAN CONNECTIONS USING SOLVENTS

E 277 E2-05 DO YOU STRIP INSULATION FROM WIRES

E 278 E2-06 DO YOU CONNECT OR DISCONNECT HEAT SINKS

E 279 E2-07 DO YOU BEND OR SHAPE WIRES OR LEADS

E 280 E2-08 DO YOU CUT WIRES

E 281 E2-09 DO YOU FILE OR SHAPE SOLDERING IRON TIPS

E 282 E2-10 DO YOU TIN SOLDERING IRON TIPS

E 283 E2-11 DO YOU CLEAN SOLDERING IRON TIPS

E 284 E2-12 DO YOU CLEAN ELECTRICAL SURFACES USING ERASERS

E 285 E2-13 DO YOU TIN OR PRE-TIN CONDUCTORS

E 286 E2-14 DO YOU INSPECT SOLDERED CONNECTIONS

E 287 E2-15 DO YOU DESOLDER CONNECTIONS BY NICKING

E 288 E2-16 DO YOU DESOLDER CONNECTIONS USING VACUUM DESOLDERING
TOOLS

E 289 E2-17 DO YOU CUT COMPONENT LEADS TO REMOVE COMPONENTS

E 290 E2-18 DO YOU CRUSH COMPONENTS FOR REMOVAL

COUPLING

SOLDERING

TOOLS

TOOLS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUNS PAGE 12

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DT-TSK

SPC SPC SPC SPC SPC SPC SPC SPC SPC SPC

E 291 E2-19 DO YOU MAKE HARDWARE CONNECTIONS
E 292 E2-20 DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS
E 293 E2-21 DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS ON PRINTED CIRCUIT BOARDS
E 294 E2-22 DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS ON PRINTED CIRCUIT BOARDS

E 295 E3-01 DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB

E 296 E3-02 DO YOU ADJUST RELAYS

E 297 E3-03 DO YOU CLEAN RELAYS

E 298 E3-04 DO YOU INSPECT RELAYS

E 299 E3-05 DO YOU REMOVE OR REPLACE COMPLETE RELAYS

E 300 E3-06 DO YOU REMOVE OR REPLACE PARTS OR RELAYS

E 301 E3-07 DO YOU TROUBLESHOOT RELAYS

E 302 E3-08 DO YOU STRAIGHTEN RELAY CONTACTS

E 303 E3-09 DO YOU PERFORM TASKS ON RELAY CONTACTS

E 304 E3-10 DO YOU PERFORM TASKS ON RELAY COILS

E 305 E3-11 DO YOU PERFORM TASKS ON RELAY ARMATURES

E 306 E3-12 DO YOU PERFORM TASKS ON RELAY SPRINGS

E 307 E3-13 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS

E 308 E3-14 DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS

E 309 E3-15 DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS

E 310 E3-16 DO YOU USE OR REFER TO OTHER RELAY SYMBOLS SCHEMATIC

E 311 E3-17 DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE

E 312 E3-18 DO YOU INSPECT MICROPHONES

E 313 E3-19 DO YOU CLEAN MICROPHONES

E 314 E3-20 DO YOU OPERATE MICROPHONES

E 315 E3-21 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OR MICROPHONES

E 316 E3-22 DO YOU TROUBLESHOOT DOWN TO MICROPHONE PARTS

E 317 E3-23 DO YOU REMOVE OR REPLACE COMPLETE MICROPHONES

E 318 E3-24 DO YOU REMOVE OR REPLACE MICROPHONE PARTS

E 319 E3-25 DO YOU PERFORM TASKS ON CARBON MICROPHONES

E 320 E3-26 DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES

E 321 E3-27 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES

E 322 E3-28 DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES

E 323 E3-29 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES

E 324 E3-30 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES

RELAYS

MICROPHONES

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-79K

[illegible]

PCT NARS RESPONDING 'YES' BY SELECTED GRPS

GPBUNS PAGE 15

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

6 383	61-30 DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	0	1	0	0	3	0
6 384	61-31 DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	0	1	0	0	3	0
6 385	61-32 DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	1	2	0	3	3	0
6 386	61-33 DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	2	2	5	3	3	3
6 387	61-34 DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	6	5	10	8	5	3
6 388	61-35 DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	2	2	0	5	3	0
6 389	61-36 DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	1	1	0	2	3	0
6 390	61-37 DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	12	11	14	10	11	9
6 391	61-38 DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	11	11	14	10	11	9
6 392	61-39 DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	1	2	0	3	3	0
6 393	61-40 DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	1	2	0	3	3	0
6 394	61-41 DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	1	1	0	2	3	0
6 395	61-42 DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	2	2	0	5	3	0
6 396	61-43 DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL	1	1	0	2	3	0
6 397	61-44 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	4	5	2	3	5	5
6 398	61-45 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	1	1	0	2	3	0
6 399	61-46 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	10	10	10	7	11	7
6 400	61-47 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	5	5	7	5	3	3
6 401	61-48 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	3	3	2	3	3	0
6 402	61-49 DO YOU USE OR REFER TO MAXIMUM BURSE CURRENT DIODE RATINGS	5	5	2	10	3	0
6 403	61-50 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	6	6	5	8	3	3
6 404	62-01 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	58	55	55	44	61	26
6 405	62-02 DO YOU INSPECT TRANSISTORS	14	14	43	43	55	25
6 406	62-03 DO YOU REMOVE OR REPLACE TRANSISTORS	37	38	33	26	41	22
6 407	62-04 DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	31	31	33	21	47	21
6 408	62-05 DO YOU USE OR REFER TO EMITTER - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	24	22	31	20	29	20
6 409	62-06 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	23	21	31	18	29	20

TRANSISTORS

Preceding Page BLANK - NOT FILMED

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GP SUM PAGE 14

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

0Y-TSK

6 410 62-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS
6 411 62-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION
6 412 62-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION
6 413 62-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER)
6 414 62-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A TRANSISTOR
6 415 62-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS
6 416 62-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS 81, 82, 83, ETC
6 417 62-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION
6 418 62-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT IE (USUALLY IS BEING 2 TO 8 PERCENT OF IE)
6 419 62-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS
6 420 62-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES
6 421 62-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES
6 422 62-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS
6 423 62-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS
6 424 62-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS
6 425 62-22 DO YOU CALCULATE BETA TRANSISTOR GAINS
6 426 62-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS
6 427 62-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS
6 428 63-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB
6 429 63-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS
6 430 63-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS
6 431 63-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL
6 432 63-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS
6 433 63-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER
6 434 63-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS
6 435 63-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE CURRENT
6 436 63-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT

TRANSISTOR
AMPLIFIERS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

CPSUMS PAGE 17

0Y-TSK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
6 437 63-10 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	4	5	10	5	3	5
6 438 63-11 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	2	3	0	3	0	3
6 439 63-12 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	7	6	10	7	3	3
6 440 63-13 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	3	3	2	2	0	3
6 441 63-14 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	0	1	0	0	0	1
6 442 63-15 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	2	3	0	7	0	1
6 443 63-16 DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	0	1	0	0	0	1
6 444 63-17 DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	15	15	12	18	11	5
6 445 63-18 DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	9	10	7	15	5	5
6 446 63-19 DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	9	9	7	13	11	4
6 447 63-20 DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	0	1	0	0	3	0
6 448 63-21 DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	0	1	0	0	3	0
6 449 63-22 DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	0	1	0	0	3	0
6 450 63-23 DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT EQ3 OF THE TRANSISTOR)	1	1	0	3	0	0
6 451 63-24 DO YOU COMPUTE THE STATIC OPERATING POINT EQ3 OF A TRANSISTOR AT DIFFERENT TEMPERATURES	0	1	0	0	0	1
6 452 63-25 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	8	8	10	8	3	7
6 453 63-26 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	8	8	10	8	5	7

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUMS PAGE 18

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
6 454 63-27 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION	6	6	7	8	5	4
6 455 63-28 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION	8	7	10	7	5	5
6 456 63-29 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION	8	7	10	7	5	5
6 457 63-30 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION	6	5	10	7	3	4
6 458 63-31 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM CHITTER (SWAMPING) RESISTOR STABILIZATION	8	8	10	8	3	7
6 459 63-32 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM SELF-BIAS STABILIZATION	9	9	10	10	5	7
6 460 63-33 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM THERMISTOR STABILIZATION	7	7	7	8	8	4
6 461 63-34 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM FORWARD BIAS DIODE STABILIZATION	10	9	14	8	11	7
6 462 63-35 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM REVERSE BIAS DIODE STABILIZATION	10	9	14	8	11	7
6 463 63-36 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM DOUBLE DIODE STABILIZATION	6	6	7	7	5	4
6 464 63-37 DO YOU IDENTIFY AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS	8	8	10	10	3	5
6 465 63-38 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF AMPLITUDE DISTORTION	7	6	10	10	0	5
6 466 63-39 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS	5	6	0	10	3	1
6 467 63-40 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS	7	7	5	13	3	4
6 468 63-41 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF PHASE DISTORTION	5	5	5	10	0	4
6 469 63-42 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF FREQUENCY DISTORTION	3	4	0	8	0	1
6 470 63-43 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS IN THE COMMON COLLECTOR CONFIGURATION	4	4	2	7	0	3
6 471 63-44 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	5	5	5	10	3	1
6 472 63-45 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	8	8	10	10	3	5
6 473 63-46 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	17	16	21	18	11	14
6 474 63-47 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS	6	6	2	11	3	4
6 475 63-48 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	8	7	10	11	3	4

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 19

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK															
6	476	03-49	DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	0	0	12	13	3	5	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
M 477	H1-01	DO YOU USE OR REFER TO VARACTORS		0	9	7	11	8	9						
M 478	H1-02	DO YOU USE OR REFER TO TUNNEL DIODES		14	14	12	13	11	9						
M 479	H1-03	DO YOU USE OR REFER TO FIELD EFFECT TRANSISTORS (FET)		14	14	12	14	8	13						
M 480	H1-04	DO YOU USE OR REFER TO UNIJUNCTION TRANSISTORS		7	8	5	11	3	4						
M 481	H1-05	DO YOU USE OR REFER TO ZENER DIODES		41	40	43	39	39	34						
M 482	H1-06	DO YOU USE OR REFER TO INTEGRATED CIRCUITS		44	44	43	39	39	31						
M 483	H2-01	IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES		40	43	48	40	42	58						
M 484	H2-02	DO YOU INSPECT POWER SUPPLIES		40	43	48	40	47	53						
M 485	H2-03	DO YOU CLEAN POWER SUPPLIES		49	52	36	44	34	46						
M 486	H2-04	DO YOU ALIGN OR ADJUST POWER SUPPLIES		33	34	26	57	13	25						
M 487	H2-05	DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL		49	51	40	41	39	45						
M 488	H2-06	DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS		37	39	29	43	26	37						
M 489	H2-07	DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES		54	59	45	75	32	58						
M 490	H2-08	DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS		31	32	26	38	24	28						
M 491	H2-09	DO YOU WORK WITH HALF-WAVE RECTIFIERS		24	27	24	38	16	18						
M 492	H2-10	DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN BRIDGE RECTIFIERS		30	29	31	48	16	21						
M 493	H2-11	DO YOU WORK WITH BRIDGE RECTIFIERS		33	33	31	48	18	24						
M 494	H2-12	DO YOU WORK WITH THREE-PHASE RECTIFIERS		25	27	19	41	18	17						
M 495	H2-13	DO YOU USE OR REFER TO INPUT VOLTAGE		35	35	34	54	21	22						
M 496	H2-14	DO YOU USE OR REFER TO INPUT FREQUENCY		23	25	14	43	13	12						
M 497	H2-15	DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGE		25	26	19	41	16	16						
M 498	H2-16	DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGE		29	31	24	48	14	20						
M 499	H2-17	DO YOU USE OR REFER TO RIPPLE AMPLITUDE		12	12	12	13	8	11						
M 500	H2-18	DO YOU USE OR REFER TO RIPPLE FREQUENCY		10	11	7	13	5	7						
M 501	H2-19	DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE		12	12	10	20	8	5						
M 502	H2-20	DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS		21	23	14	38	11	14						
M 503	H2-21	DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGE		25	25	21	38	13	18						
M 504	H2-22	DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE FILTERS		29	27	38	39	13	22						
M 505	H2-23	DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE FILTERS		23	23	21	34	5	14						
M 506	H2-24	DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE INPUT L-TYPE FILTERS		17	15	21	34	3	7						
M 507	H2-25	DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE INPUT L-TYPE FILTERS		15	15	17	33	3	5						
M 508	H2-26	DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE FILTERS		13	14	12	28	3	5						
M 509	H2-27	DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE FILTERS		15	15	14	30	5	8						
M 510	H2-28	DO YOU WORK WITH CIRCUITS WHICH EMPLOY DON'T REMEMBER WHICH TYPE OF FILTER		21	23	14	30	24	14						
M 511	H2-29	DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF FILTER WITH A DIFFERENT TYPE FILTER		2	3	0	3	5	1						
M 512	H3-01	DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB		13	14	10	21	11	4						OSCILLATORS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUMS PAGE 20

DY-TSK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
M 513 M3-02 DO YOU INSPECT OSCILLATORS	10	11	7	18	5	1
M 514 M3-03 DO YOU ALIGN OR ADJUST OSCILLATORS	7	7	7	13	3	1
M 515 M3-04 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS	9	9	7	15	5	1
M 516 M3-05 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS	4	4	5	8	5	1
M 517 M3-06 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL	8	9	5	14	5	1
M 518 M3-07 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS	7	7	5	11	5	1
M 519 M3-08 DO YOU USE OR REFER TO FEEDBACK	8	8	7	15	5	3
M 520 M3-09 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)	5	4	0	10	3	3
M 521 M3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY	5	5	7	8	3	3
M 522 M3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY	5	5	5	10	3	1
M 523 M3-12 DO YOU USE OR REFER TO DAMPING	6	6	5	11	5	0
M 524 M3-13 DO YOU USE OR REFER TO REGENERATIVE FEEDBACK	7	7	5	15	5	0
M 525 M3-14 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT	2	3	0	3	3	1
M 526 M3-15 DO YOU USE OR REFER TO CRITICAL DAMPING	3	4	0	7	3	0
M 527 M3-16 DO YOU USE OR REFER TO UNDER DAMPING	3	4	0	8	3	0
M 528 M3-17 DO YOU USE OR REFER TO OVER DAMPING	3	4	0	8	3	0
M 529 M3-18 DO YOU WORK WITH OSCILLATORS WHICH USE LC TANK CIRCUITS AS FDD	4	5	0	8	3	1
M 530 M3-19 DO YOU WORK WITH OSCILLATORS WHICH USE RC NETWORKS AS FDD	6	6	5	11	3	1
M 531 M3-20 DO YOU WORK WITH OSCILLATORS WHICH USE CRYSTALS AS FDD	2	3	0	5	0	1
M 532 M3-21 DO YOU WORK WITH OSCILLATORS WHICH USE DON'T REMEMBER WHICH TYPE OF FDD	4	5	2	8	3	1
M 533 M3-22 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS	3	2	5	3	0	3
M 534 M3-23 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS	4	4	5	7	0	3
M 535 M3-24 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS	4	4	5	7	0	3
M 536 M3-25 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS	2	2	0	3	0	1
M 537 M3-26 DO YOU WORK WITH BUTLER SINUSOIDAL OSCILLATORS	2	2	2	3	0	3
M 538 M3-27 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF OSCILLATORS	6	6	5	11	3	1
I 539 I1-01 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB	8	9	2	14	5	1
I 540 I1-02 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS	5	4	0	13	5	0
I 541 I1-03 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS	4	5	0	10	3	0
I 542 I1-04 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS	3	4	0	10	3	0
I 543 I1-05 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS	6	7	0	15	5	0
I 544 I1-06 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS	5	4	0	13	3	0
I 545 I1-07 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS	5	4	0	13	5	0
I 546 I1-08 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS	4	4	2	8	3	0
I 547 I1-09 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUITS	4	5	2	11	0	0

MULTIVIBRATORS

PCT HAVE RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 21

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC SPC SPC SPC
074 077 078 079 080 081

1 548 11-10 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC NETWORKS
1 549 11-11 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN CRYSTALS
1 550 11-12 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN DON'T REMEMBER WHICH TYPE OF FDD
1 551 11-13 DO YOU WORK WITH ASTABLE MULTIVIBRATORS
1 552 11-14 DO YOU WORK WITH MONOSTABLE MULTIVIBRATORS
1 553 11-15 DO YOU WORK WITH BISTABLE MULTIVIBRATORS
1 554 11-16 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE MULTIVIBRATORS
1 555 12-01 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR PRESENT JOB
1 556 12-02 DO YOU WORK WITH SERIES DIODE LIMITERS
1 557 12-03 DO YOU WORK WITH SHUNT DIODE LIMITERS
1 558 12-04 DO YOU WORK WITH LIMITERS WITH BIAS
1 559 12-05 DO YOU WORK WITH ZENER DIODE LIMITERS
1 560 12-06 DO YOU WORK WITH TRANSISTOR LIMITERS
1 561 12-07 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF LIMITERS
1 562 12-08 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS
1 563 12-09 DO YOU WORK WITH DIODE CLAMPING CIRCUITS WITH BIAS
1 564 12-10 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF CLAMPING CIRCUIT

LIMITERS AND
CLAMPERS

1 565 13-01 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH CONTAINS ELECTRON TUBES
1 566 13-02 DO YOU CHECK ELECTRON TUBES TO SEE IF THEY ARE GOOD
1 567 13-03 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES
1 568 13-04 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES
1 569 13-05 DO YOU USE SCOPES TO CHECK ELECTRON TUBES
1 570 13-06 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES
1 571 13-07 DO YOU USE OR REFER TO CUTOFF
1 572 13-08 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING
1 573 13-09 DO YOU USE OR REFER TO PEAK CURRENT RATING
1 574 13-10 DO YOU USE OR REFER TO TRANSIT TIME
1 575 13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING
1 576 13-12 DO YOU USE OR REFER TO SATURATION
1 577 13-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE
1 578 13-14 DO YOU COMPUTE ACTUAL VALUES OF THE DC PLATE RESISTANCE FOR ELECTRON TUBES
1 579 13-15 DO YOU USE OR REFER TO PLATE VOLTAGE
1 580 13-16 DO YOU USE OR REFER TO PLATE CURRENT
1 581 13-17 DO YOU USE OR REFER TO GRID VOLTAGE
1 582 13-18 DO YOU USE OR REFER TO GRID CURRENT
1 583 13-19 DO YOU USE OR REFER TO CATHODE VOLTAGE
1 584 13-20 DO YOU USE OR REFER TO CATHODE CURRENT
1 585 13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID VOLTAGE)

ELECTRON TUBES

PCT MEMBERS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUMS PAGE 22

0Y-TSK

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

1 586 13-22 DO YOU CALCULATE ACTUAL VALUES OF TRIODE
AMPLIFICATION FACTORS
1 587 13-23 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE,
ETC) AMPLIFICATION FACTORS
1 588 13-24 DO YOU USE OR REFER TO ELECTRON TUBE TRANSDUCTANCE
(G, WHICH IS MEASURED IN MHOS)
1 589 13-25 DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE
TRANSDUCTANCES
1 590 13-26 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER
CALLED AC PLATE RESISTANCE
1 591 13-27 DO YOU CALCULATE ACTUAL VALUES OF AC PLATE
RESISTANCE
1 592 13-28 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE
CAPACITANCE
1 593 13-29 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR
WORK WITH ELECTRON TUBES
1 594 13-30 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE
VOLTAGE FOR A SPECIFIED BIAS
1 595 13-31 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE
CURRENT FOR A SPECIFIED BIAS
1 596 13-32 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS
REQUIRED FOR CUTOFF
1 597 13-33 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS
REQUIRED FOR SATURATION
1 598 13-34 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN
1 599 13-35 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER
EFFICIENCY
1 600 13-36 DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON
TUBE AMPLIFIER GAIN
1 601 13-37 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE
AMPLIFIER GAIN
1 602 13-38 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE
AMPLIFIER GAIN
1 603 13-39 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE
ELECTRON TUBE AMPLIFIER GAIN
1 604 13-40 DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH
AS INPUT CAPACITANCE
1 605 13-41 DO YOU USE OR REFER TO TUBE SOCKET NOTATION
1 606 13-42 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS
1 607 13-43 DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE
OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE
ELECTRON TUBES YOU WORK ON
1 608 13-44 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL
SUCH AS MANUALS OR CHARTS
J 609 JI-01 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS
IN YOUR PRESENT JOB
J 610 JI-02 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON
TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER
CIRCUITS

ELECTRON TUBE
AMPLIFIERS
AND CIRCUITS

26 24 36 52 5 20
33 28 55 56 8 28
9 9 10 20 0 3

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 23

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

0Y-TSK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
J 611 J1-03 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	9	8	14	18	0	7
J 612 J1-04 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	19	17	29	33	3	13
J 613 J1-06 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	11	9	19	20	0	7
J 614 J1-06 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	8	4	14	11	0	6
J 615 J1-07 DO YOU TROUBLESHOOT OR REPAIR DON'T KNOW WHICH TYPE OF AMPLIFIER	20	14	36	30	11	14
J 616 J2-01 DO YOU WORK WITH GAS TUBES (NOT CATHODE OR COLD CATHODE)	19	20	17	39	5	11
J 617 J2-02 DO YOU WORK WITH CATHODE-RAY TUBES	12	15	2	33	3	3
J 618 J2-03 DO YOU USE OR REFER TO THE CHARACTERISTICS OF BEAM POWER TUBES	2	2	5	3	0	1
J 619 J2-04 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH BEAM POWER TUBES ARE USED	2	1	5	0	3	1
J 620 J2-05 DO YOU USE OR REFER TO THE CHARACTERISTICS OF THYRATONS	0	1	0	0	0	1
J 621 J2-06 DO YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH THYRATONS ARE USED	1	1	0	0	0	1
J 622 J2-07 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)	2	3	0	5	0	1
J 623 J2-08 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	1	2	0	2	0	1
J 624 J2-09 DO YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	1	1	0	2	0	0
J 625 J2-10 DO YOU USE OR REFER TO PHOSPHOR SCREENS	4	5	0	6	0	4
J 626 J2-11 DO YOU USE OR REFER TO AQUADAG COATINGS	0	0	0	0	0	0
J 627 J2-12 DO YOU USE OR REFER TO ELECTRON OPTICS	0	1	0	0	3	0
J 628 J2-13 DO YOU USE OR REFER TO PERSISTENCE	1	2	0	3	0	1
J 629 J2-14 DO YOU USE OR REFER TO DECAY TIMES	2	2	2	7	0	0
J 630 J2-15 DO YOU USE OR REFER TO FLUORESCENCE	3	4	0	7	3	3
J 631 J2-16 DO YOU USE OR REFER TO PHOSPHORESCENCE	3	4	0	7	3	3
J 632 J3-01 DO YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	1	1	0	2	0	1
J 633 J3-02 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	1	1	0	0	0	1
J 634 J3-03 DO YOU PERFORM TASKS ON FREQUENCY MIXERS	1	2	0	2	0	1
J 635 J3-04 DO YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS	1	1	0	0	0	1
J 636 J3-05 DO YOU PERFORM TASKS ON REACTANCE MODULATORS	1	1	0	0	0	1
J 637 J3-06 DO YOU PERFORM TASKS ON MODULATED OSCILLATORS	1	1	0	0	0	1
K 638 K1-01 DO YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	0	1	0	0	0	1
K 639 K1-02 DO YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS	1	1	0	0	0	1
K 640 K1-03 DO YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS	1	1	0	0	0	1
K 641 K1-04 DO YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS	1	1	0	0	0	1

HETERODYNING,
MODULATION, AND
DEMULATION

AM SYSTEMS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 24

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		0Y-TSK									
		SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 091				
K 642	K1-08 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS	1	1	0	0	0	1				
K 643	K1-06 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE COMPONENTS	1	1	0	0	0	1				
K 644	K1-07 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE SYSTEMS	1	1	0	0	0	1				
K 645	K1-08 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE COMPONENTS	1	1	0	0	0	1				
K 646	K1-09 DO YOU PERFORM TASKS ON RF OSCILLATORS	1	1	0	0	0	1				
K 647	K1-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS	1	1	0	0	0	1				
K 648	K1-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	1	1	0	0	0	1				
K 649	K1-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	1	1	0	0	0	1				
K 650	K1-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS	1	1	0	0	0	1				
K 651	K1-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS	1	1	0	0	0	1				
K 652	K1-15 DO YOU PERFORM TASKS ON DETECTORS	1	1	0	0	0	1				
K 653	K1-16 DO YOU PERFORM TASKS ON DON'T REMEMBER WHICH AM STAGE	0	0	0	0	0	0				
K 654	K1-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN TRANSMITTERS	0	1	0	0	0	1				
K 655	K1-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN TRANSMITTERS	0	1	0	0	0	1				
K 656	K1-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS	1	1	0	0	0	1				
K 657	K1-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS	1	1	0	0	0	1				
K 658	K1-21 DO YOU USE OR REFER TO 2ND HARMONIC DISTORTION	1	1	0	0	0	1				
K 659	K1-22 DO YOU USE OR REFER TO BANDPASS DISTORTION	1	1	0	0	0	1				
K 660	K1-23 DO YOU USE OR REFER TO SQUARE LAW DISTORTION	1	1	0	0	0	1				
K 661	K1-24 DO YOU USE OR REFER TO CO-CHANNEL INTERFERENCE	1	1	0	0	0	1				
K 662	K1-25 DO YOU USE OR REFER TO IMAGE FREQUENCIES IN RECEIVERS	1	1	0	0	0	1				
K 663	K1-26 DO YOU USE OR REFER TO SIGNAL TO IMAGE RATIOS OR IMAGE REJECTION RATIOS	1	1	0	0	0	1				
K 664	K1-27 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM TRANSMITTER SCHEMATIC DIAGRAMS	0	1	0	0	0	1				
K 665	K1-28 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH AM RECEIVER SCHEMATIC DIAGRAMS	0	1	0	0	0	1				
K 666	K2-01 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	0	0	0	0	0	0				
K 667	K2-02 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0				
K 668	K2-03 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0				
K 669	K2-04 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0				
K 670	K2-05 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0				
K 671	K2-06 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE COMPONENTS	0	0	0	0	0	0				
K 672	K2-07 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE SYSTEMS	0	1	0	0	0	3				
K 673	K2-08 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE COMPONENTS	0	0	0	0	0	0				
K 674	K2-09 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS	0	0	0	0	0	0				
K 675	K2-10 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS	0	0	0	0	0	0				

FM SYSTEMS

PCT NBSR RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 28

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DT-TSK

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

K 676 K2-11 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)	0	0	0	0	0	0
K 677 K2-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS	0	0	0	0	0	0
K 678 K2-13 DO YOU PERFORM TASKS ON RF AMPLIFIERS	0	0	0	0	0	0
K 679 K2-14 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS	0	0	0	0	0	0
K 680 K2-15 DO YOU PERFORM TASKS ON IF AMPLIFIERS	0	0	0	0	0	0
K 681 K2-16 DO YOU PERFORM TASKS ON LIMITERS	0	0	0	0	0	0
K 682 K2-17 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS	0	0	0	0	0	0
K 683 K2-18 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS	0	1	0	2	0	0
K 684 K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS	0	0	0	0	0	0
K 685 K3-01 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS	4	4	5	2	0	7
K 686 K3-02 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS	7	4	10	2	0	12
K 687 K3-03 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS	5	4	7	2	0	7
K 688 K3-04 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS	4	4	5	0	0	7
K 689 K3-05 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS	6	7	10	5	0	11
K 690 K3-06 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS	4	4	5	0	0	7
K 691 K3-07 DO YOU ADD BINARY NUMBERS TO GET A SUM	6	6	10	5	3	11
K 692 K3-08 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD	4	3	7	0	0	5
K 693 K3-09 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD	5	5	7	2	0	6
K 694 K3-10 DO YOU ADD OCTAL NUMBERS TO GET A SUM	3	3	5	0	0	5
L 695 L1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS	10	12	5	20	0	9
L 696 L1-02 DO YOU CONSTRUCT TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	5	5	2	3	3	7
L 697 L1-03 DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	5	5	2	3	3	7
L 698 L1-04 DO YOU CONSTRUCT TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	4	4	2	3	3	4
L 699 L1-05 DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS OR GATES	2	2	2	2	3	3
L 700 L1-06 DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES	5	5	2	7	0	7
L 701 L1-07 DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES	5	5	2	7	0	7
L 702 L1-08 DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS	3	4	2	3	0	5
L 703 L1-09 DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS	3	3	2	2	0	7
L 704 L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES	8	9	5	16	0	7
L 705 L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES	8	9	5	16	0	7
L 706 L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR GATES	8	9	5	16	0	7

NUMBERING
SYSTEMS

LOGIC FUNCTIONS

PCT MARS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 26

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

SPC SPC SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

0Y-TSK

L 707	L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR EXCLUSIVE OR GATES	7	7	5	13	0	7
L 708	L2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAM, OR LOGIC CIRCUITS	3	4	0	3	0	3
L 709	L2-02 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS	0	0	0	0	0	0
L 710	L2-03 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	0	0	0	0	0	0
L 711	L2-04 DO YOU DRAW LOGIC DIAGRAM FROM GIVEN BOOLEAN EQUATIONS	0	1	0	0	0	1
L 712	L2-05 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES	2	3	0	5	0	1
L 713	L2-06 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS	0	1	0	0	0	1
L 714	L2-07 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA	2	2	0	2	0	3
L 715	L2-08 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES	1	1	0	3	0	0
L 716	L2-09 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS	0	0	0	0	0	0
L 717	L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE	3	4	0	3	0	3
L 718	L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS	0	1	0	2	0	0
L 719	L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS	1	2	0	3	0	0
L 720	L2-13 DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS	2	2	0	5	0	0
L 721	L2-14 DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS	3	4	0	5	0	3
L 722	L2-15 DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS	2	3	0	5	0	1
L 723	L2-16 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS	2	3	0	5	0	1
L 724	L2-17 DO YOU USE OR REFER TO SINGLE-SHOT MULTIVIBRATOR SYMBOLS	2	3	0	5	0	1
L 725	L2-18 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT DIAGRAMS	2	3	0	5	0	1
L 726	L2-19 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES	2	2	0	3	0	1
L 727	L2-20 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS	1	1	0	3	0	0
L 728	L2-21 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS	1	1	0	3	0	0
L 729	L2-22 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS	1	2	0	5	0	0
L 730	L2-23 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS	1	2	0	5	0	0
L 731	L2-24 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS	1	2	0	5	0	0
L 732	L2-25 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS	0	0	0	0	0	0

BOOLEAN
EQUATIONS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUMS PAGE 27

0Y-TSK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081	
L 733 L3-01 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB	0	7	12	15	0	11	
L 734 L3-02 DO YOU USE OR REFER TO UP-COUNTERS	3	4	0	7	0	4	
L 735 L3-03 DO YOU USE OR REFER TO DOWN-COUNTERS	3	4	0	5	0	4	
L 736 L3-04 DO YOU USE OR REFER TO SERIAL COUNTERS	3	4	0	7	0	3	COUNTERS
L 737 L3-05 DO YOU USE OR REFER TO PARALLEL COUNTERS	1	2	0	3	0	1	
L 738 L3-06 DO YOU USE OR REFER TO RING COUNTERS	2	2	5	5	0	3	
L 739 L3-07 DO YOU USE OR REFER TO DECADE COUNTERS	2	2	0	5	0	1	
L 740 L3-08 DO YOU USE OR REFER TO COUNT DETECT CIRCUITS	2	2	2	3	0	3	
L 741 L3-09 DO YOU USE OR REFER TO DOWN CLOCKS	2	3	0	5	0	3	
L 742 L3-10 DO YOU USE OR REFER TO UP CLOCKS	2	3	0	5	0	3	
L 743 L3-11 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF	1	1	0	3	0	0	
L 744 L3-12 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF	1	1	0	3	0	0	
SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP- FLOPS							
L 745 L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF	1	1	0	3	0	0	
DECADE COUNTERS							
L 746 L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF	1	1	0	3	0	0	
RING COUNTERS							
L 747 L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF	0	1	0	2	0	0	
SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER							
L 748 L3-16 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF	1	2	0	5	0	0	
SHIFT REGISTERS							
L 749 L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF	3	3	2	8	0	1	
OTHER TYPE OF COUNTERS							
L 750 L3-18 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT	0	1	0	2	0	0	
PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS							
L 751 L3-19 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT	0	0	0	0	0	0	
PULSES FOR SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENT- ING FLIP-FLOPS							
L 752 L3-20 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT	1	2	0	2	3	1	
PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTERS							
L 753 L3-21 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT	2	2	0	7	0	0	
PULSES FOR OTHER TYPES OF COUNTERS							
L 754 L3-22 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF	0	0	0	0	0	0	
DECADE COUNTERS							
L 755 L3-23 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING	1	1	0	3	0	0	
COUNTERS FOR SPECIFIC INPUT PULSES							
L 756 L3-24 DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY	0	1	0	2	0	0	
IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT							
M 757 MI-01 DO YOU WORK WITH SAWTOOTH WAVE GENERATORS	4	8	0	11	5	3	
M 758 MI-02 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS	3	4	0	2	3	1	
M 759 MI-03 DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE	5	5	2	10	0	3	TIMING CIRCUITS
FEEDBACK							
M 760 MI-04 DO YOU WORK WITH PULSED OSCILLATORS WITHOUT	3	4	0	5	0	3	
REGENERATIVE FEEDBACK							

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 28

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSR

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
M 761 M1-05 DO YOU WORK WITH BLOCKING OSCILLATORS	3	4	0	5	0	3
M 762 M1-06 DO YOU USE OR REFER TO RISE TIME	4	4	2	7	0	4
M 763 M1-07 DO YOU USE OR REFER TO FALL OR PLYBACK TIME	3	4	0	7	0	3
M 764 M1-08 DO YOU USE OR REFER TO SWEEP TIME	5	6	0	11	3	3
M 765 M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH	4	5	0	5	3	4
WAVEFORMS						
M 766 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH	4	5	0	8	0	3
WAVEFORMS						
M 767 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH	3	4	0	7	0	3
WAVEFORMS						
M 768 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH	3	4	0	7	0	3
WAVEFORMS						
M 769 M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB	15	18	2	26	5	16
M 770 M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS	15	18	2	26	5	14
M 771 M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS	11	14	2	23	5	8
M 772 M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS	13	16	2	26	5	12
M 773 M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS	7	8	2	11	3	8
M 774 M2-06 DO YOU USE AUDIO SINE-WAVE GENERATORS	8	10	2	15	0	9
M 775 M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE	4	5	2	7	3	4
M 776 M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MH	4	5	0	3	3	5
M 777 M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MH	3	4	0	2	3	5
M 778 M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS	9	11	2	16	0	13
M 779 M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR GENERATORS	52	51	57	80	16	50
M 780 M3-02 DO YOU INSPECT MOTORS	49	48	52	80	16	42
M 781 M3-03 DO YOU CLEAN OR LUBRICATE MOTORS	41	39	48	70	16	30
M 782 M3-04 DO YOU OPERATE MOTORS	47	45	55	77	16	39
M 783 M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS	50	49	57	80	16	46
M 784 M3-06 DO YOU REMOVE OR REPLACE MOTOR PARTS	27	26	33	51	11	14
M 785 M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS	43	41	52	67	13	38
M 786 M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS	21	21	21	38	5	12
M 787 M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS	7	7	7	15	0	7
M 788 M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES	17	15	21	31	5	14
M 789 M3-11 DO YOU PERFORM ANY TASKS ON ROTORS	12	12	14	25	3	9
M 790 M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES	34	32	43	62	11	24
M 791 M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS	11	11	10	26	0	5
M 792 M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS	16	17	12	34	3	9
M 793 M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES	6	6	2	13	0	3

MOTORS AND
GENERATORS

USE OF SIGNAL
GENERATORS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

OPSUNS PAGE 29

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSR

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081	
M 799 M3-16 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OF THE FORCE OR TORQUE CREATED BY A MOTOR	28	30	21	61	3	22	
M 798 M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR	31	32	29	89	5	29	
M 796 M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS	17	16	19	21	5	20	
M 797 M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS	28	29	24	46	11	26	
M 798 M3-20 DO YOU WORK WITH INDUCTION MOTORS	23	22	24	41	3	21	
M 799 M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS	17	17	14	30	3	14	
M 800 M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS	34	33	40	57	8	32	
M 801 M3-23 DO YOU INSPECT GENERATORS	29	28	33	51	11	20	
M 802 M3-24 DO YOU CLEAN OR LUBRICATE GENERATORS	22	23	17	39	11	14	
M 803 M3-25 DO YOU OPERATE GENERATORS	27	26	31	48	11	21	
M 804 M3-26 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS	25	25	26	41	13	20	
M 805 M3-27 DO YOU REMOVE OR REPLACE GENERATOR PARTS	12	13	10	21	11	5	
M 806 M3-28 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS	26	25	29	44	8	20	
M 807 M3-29 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS	8	9	7	15	8	4	
M 808 M1-01 DO YOU WORK WITH METERS IN YOUR PRESENT JOB	80	77	90	80	71	76	
M 809 M1-02 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF PERMANENT MAGNETS	12	11	19	13	11	11	
M 810 M1-03 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF MOVING COILS	13	11	21	19	14	9	METER MOVEMENTS
M 811 M1-04 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS	12	12	14	14	18	8	
M 812 M1-05 DO YOU READ METER SCALES	82	80	90	80	79	79	
M 813 M1-06 DO YOU EXTEND THE RANGE OF AMMETERS	25	25	24	25	24	28	
M 814 M1-07 DO YOU ZERO OHMMETERS	80	78	88	77	79	78	
M 815 M1-08 DO YOU ZERO VOLTMETERS	20	22	14	21	21	22	
M 816 M1-09 DO YOU EXTEND THE RANGE OF VOLTMETERS	37	37	34	34	34	42	
M 817 M1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)	50	49	52	41	32	53	
M 818 M2-01 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB	14	15	10	36	8	1	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS
M 819 M2-02 DO YOU INSPECT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	14	15	10	34	8	1	
M 820 M2-03 DO YOU CLEAN MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	8	9	2	20	5	1	
M 821 M2-04 DO YOU ADJUST MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	4	5	2	10	5	0	
M 822 M2-05 DO YOU TROUBLESHOOT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	11	11	10	25	8	1	
M 823 M2-06 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS	13	14	10	33	8	1	
M 824 M2-07 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS	4	4	2	7	8	0	

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 30

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

N 825 N2-08 DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS	1	2	0	3	3	0
N 826 N2-09 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT	2	2	5	3	3	0
WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF						
SINGLE WINDING SATURABLE REACTORS						
N 827 N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR	4	4	2	8	5	0
WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE						
REACTORS						
N 828 N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT	3	3	5	7	3	0
WAVEFORMS FOR MAGNETIC AMPLIFIERS						
N 829 N2-12 DO YOU USE OR REFER TO COERCIVE FORCE IN SATURABLE	1	1	0	2	3	0
REACTORS						
N 830 N2-13 DO YOU USE OR REFER TO RESIDUAL MAGNETISM IN	2	2	0	5	3	0
SATURABLE REACTORS						
N 831 N2-14 DO YOU USE OR REFER TO FLUX DENSITY IN SATURABLE	3	4	0	8	3	0
REACTORS						
N 832 N2-15 DO YOU USE OR REFER TO POINT OF SATURATION IN	2	3	0	7	3	0
SATURABLE REACTORS						
N 833 N2-16 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC	5	6	2	15	3	0
SYMBOLS						
N 834 N3-01 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT	8	10	0	20	5	3
JOB						
N 835 N3-02 DO YOU USE OR REFER TO TRANSIENT INTERVALS	1	1	0	3	0	0
N 836 N3-03 DO YOU USE OR REFER TO PULSE WIDTH (PW)	4	5	0	10	3	1
N 837 N3-04 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	3	4	0	7	3	3
N 838 N3-05 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY	2	3	0	5	3	1
(PRF)						
N 839 N3-06 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS	4	5	0	8	3	3
N 840 N3-07 DO YOU USE OR REFER TO INTEGRATING CIRCUITS	6	0	0	16	3	3
N 841 N3-08 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME	4	5	0	8	3	3
CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT						
N 842 N3-09 DO YOU DETERMINE WHETHER AN LR OR RC CIRCUIT IS	1	2	0	3	0	1
DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT						
AND OUTPUT CONFIGURATION						
N 843 N3-10 DO YOU WORK WITH SQUARE WAVE GENERATORS	5	4	0	13	3	1
N 844 N3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATORS	3	4	0	7	3	1
O 845 01-01 DO YOU WORK ON SINGLE SIDEBAND SYSTEMS IN YOUR	0	1	0	2	0	0
PRESENT JOB						
O 846 01-02 DO YOU INSPECT SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0
O 847 01-03 DO YOU CLEAN SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0
O 848 01-04 DO YOU ALIGN SSB TRANSMIT OR RECEIVE SYSTEMS	0	0	0	0	0	0
O 849 01-05 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE	0	0	0	0	0	0
SYSTEMS						
O 850 01-06 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE	0	0	0	0	0	0
COMPONENTS						
O 851 01-07 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE	0	0	0	0	0	0
SYSTEMS						
O 852 01-08 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE	0	0	0	0	0	0
COMPONENTS						

WAVESHAPING
CIRCUITS

SINGLE SIDEBAND
SYSTEMS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

[illegible]

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 32

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		DY-TSK													
		SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
		076	077	078	079	080	081	082	083	084	085	086	087	088	089
0 889	02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLIES	1	1	0	3	0	0								
0 890	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODES	1	1	0	3	0	0								
0 891	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORKS	1	1	0	3	0	0								
0 892	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMERS	1	1	0	3	0	0								
0 893	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATROMS	0	0	0	0	0	0								
0 894	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMERS	0	1	0	2	0	0								
0 895	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBES	0	1	0	2	0	0								
0 896	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIERS	0	1	0	2	0	0								
0 897	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTERS	0	1	0	2	0	0								
0 898	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIERS	0	1	0	2	0	0								
0 899	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTORS	0	1	0	2	0	0								
0 900	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIERS	0	0	0	0	0	0								
0 901	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIERS	0	0	0	0	0	0								
0 902	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DON'T REMEMBER WHICH PULSE MODULATION SYSTEM STAGES	0	0	0	0	0	0								
0 903	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	0	0	0	0	0	0								
0 904	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	0	1	0	2	0	0								
0 905	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW)	1	1	0	3	0	0								
0 906	02-32 DO YOU USE OR REFER TO PULSE SHAPE	1	1	0	3	0	0								
0 907	02-33 DO YOU USE OR REFER TO PEAK POWER	0	1	0	2	0	0								
0 908	02-34 DO YOU USE OR REFER TO AVERAGE POWER	0	1	0	2	0	0								
0 909	02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	0	0	0	0	0	0								
0 910	02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	0	1	0	2	0	0								
0 911	02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS	0	0	0	0	0	0								
0 912	02-38 DO YOU TRACE SIGNALS ON CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS	0	0	0	0	0	0								
0 913	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS	0	0	0	0	0	0								
0 914	03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB	1	1	0	0	0	0								
0 915	03-02 DO YOU INSPECT ANTENNAS	1	1	0	0	0	0								
												ANTENNAS			

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-73K

[illegible]

PCT NBSRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 34

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

0 945 03-32 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS
0 946 03-33 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS
0 947 03-34 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS
0 948 03-35 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DON'T REMEMBER WHAT KIND OF ELEMENTS
0 949 03-36 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS
0 950 03-37 DO YOU WORK ON BIDIRECTIONAL ANTENNAS
0 951 03-38 DO YOU WORK ON DON'T REMEMBER THE DIRECTIONALITY
0 952 03-39 DO YOU WORK WITH ROTAR ANTENNA ARRAYS
P 953 P1-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES)
P 954 P1-02 DO YOU REFER TO OR USE COPPER LOSS OR I2R LOSS IN TRANSMISSION LINES
P 955 P1-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES
P 956 P1-04 DO YOU REFER TO OR USE RADIATION LOSS IN TRANSMISSION LINES
P 957 P1-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN TRANSMISSION LINES
P 958 P1-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION LINES
P 959 P1-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES
P 960 P1-08 DO YOU WORK WITH THIN LEAD TRANSMISSION LINES
P 961 P1-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES
P 962 P1-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES
P 963 P1-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES
P 964 P1-12 DO YOU TROUBLESHOOT TRANSMISSION LINES
P 965 P1-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)
P 966 P1-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS
P 967 P1-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS
P 968 P1-16 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES
P 969 P1-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES
P 970 P1-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS

TRANSMISSION
LINES

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

SPSUNS PAGE 35

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

P 971 P1-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED
TO LOADS USING MATCHING TRANSFORMERS

P 972 P1-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED
TO LOADS USING DELTA MATCHING

P 973 P1-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED
FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA

P 974 P1-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC
IMPEDANCE (Z0) OF TRANSMISSION LINES

P 975 P1-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (Z0) OF
TRANSMISSION LINES

P 976 P1-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF
TRANSMISSION LINES

P 977 P1-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K)
OF TRANSMISSION LINES

P 978 P1-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION
LINES FOR PARTICULAR FREQUENCIES

P 979 P1-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR
ELECTRICAL LENGTH FOR GIVEN FREQUENCIES

P 980 P1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE
FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF
TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH
INCREASES

P 981 P1-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION
LINES

P 982 P1-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES

P 983 P1-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED
TO LOADS USING STUB MATCHING

P 984 P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN
YOUR PRESENT JOB

P 985 P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS

P 986 P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS

P 987 P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS

P 988 P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS

P 989 P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS

P 990 P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS

P 991 P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS

P 992 P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES

P 993 P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS

P 994 P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS

P 995 P2-12 DO YOU REMOVE OR INSTALL E BENDS

P 996 P2-13 DO YOU REMOVE OR INSTALL H BENDS

P 997 P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS

P 998 P2-15 DO YOU REMOVE OR INSTALL CHOKE JOINTS

P 999 P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS

P1000 P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS

P1001 P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS

P1002 P2-19 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES

WAVEGUIDES AND
CAVITY RESONATORS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUNS PAGE 36

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

SPC SPC SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

DY-TSK

P1003 P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES
P1004 P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES
P1006 P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF
WAVEGUIDES
P1006 P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF
WAVEGUIDES
P1007 P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY
CONDITIONS
P1008 P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY
CONDITIONS
P1009 P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY
CONDITIONS
P1010 P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST
WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .27 WAVELENGTHS
OF THE OPERATING FREQUENCY
P1011 P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A"
WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35
USED AS AN AVERAGE
P1012 P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS)
WHICH WAVEGUIDES ARE MADE OF
P1013 P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC
INSTALLATION
P1014 P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE
DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR
DIRECTION OF "H" FIELD IN WAVEGUIDES
P1015 P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR
"H" LINES IN WAVEGUIDES
P1016 P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN
WAVEGUIDES
P1017 P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR
"H" LINES IN WAVEGUIDES
P1018 P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY
RESONATORS YOU WORK WITH
P1019 P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY
RESONATORS YOU WORK WITH
P1020 P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS
YOU WORK WITH
P1021 P2-38 ARE APERTURES (WINDOWS OR IRISES) USED ON WAVEGUIDES
OR CAVITY RESONATORS YOU WORK WITH
P1022 P2-39 ARE DON'T REMEMBER THE KIND OF ENERGY COUPLING USED
ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH
P1023 P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN
WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO
TECHNICAL DATA
P1024 P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN
WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO
TECHNICAL DATA

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUNS PAGE 37

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

SPC SPC SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

0Y-TSK

P1025 P2-42 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES
IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO
TECHNICAL DATA

P1026 P2-43 ARE CHOKES USED IN WAVEGUIDES OR CAVITY
RESONATORS YOU WORK WITH

P1027 P2-44 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY
RESONATORS YOU WORK WITH

P1028 P2-45 ARE DON'T REMEMBER THE KIND OF JOINTS USED IN
WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH

P1029 P2-46 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING

P1030 P2-47 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING

P1031 P2-48 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING

P1032 P2-49 DO YOU TUNE CAVITY RESONATORS USING DON'T REMEMBER
THE METHOD OF TUNING

P1033 P2-50 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY
RESONATORS

P1034 P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS,
TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR
MAGNETRONS

P1035 P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE

P1036 P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME

P1037 P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE

P1038 P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL
CIRCUITRY

P1039 P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY
MODULATION

P1040 P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING

P1041 P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS

P1042 P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS

P1043 P3-10 DO YOU WORK WITH REFLEX KLYSTRONS

P1044 P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)

P1045 P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC
AMPLIFIERS

P1046 P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS

P1047 P3-14 DO YOU WORK WITH MAGNETRONS

P1048 P3-15 DO YOU INSPECT KLYSTRONS OR TWT

P1049 P3-16 DO YOU CLEAN KLYSTRONS OR TWT

P1050 P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY

P1051 P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY

P1052 P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR
TWT

P1053 P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT

P1054 P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT

P1055 P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS

P1056 P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS

P1057 P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS

P1058 P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS

MICROWAVE
AMPLIFIERS AND
OSCILLATORS

PCT MERS RESPONDING 'YES' BY SELECTED GRPS

CPSUMS PAGE 38

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
P1059 P3-26 DO YOU TUNE PARAMETRIC AMPLIFIERS	0	0	0	0	0	0
P1060 P3-27 DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS	0	0	0	0	0	0
P1061 P3-28 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS	0	0	0	0	0	0
P1062 P3-29 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER	0	0	0	0	0	0
P1063 P3-30 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS	0	0	0	0	0	0
P1064 P3-31 DO YOU INSPECT MAGNETRONS	0	0	0	0	0	0
P1065 P3-32 DO YOU CLEAN MAGNETRONS	0	0	0	0	0	0
P1066 P3-33 DO YOU ADJUST MAGNETRONS	0	0	0	0	0	0
P1067 P3-34 DO YOU TUNE MAGNETRONS	0	0	0	0	0	0
P1068 P3-35 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS	0	0	0	0	0	0
P1069 P3-36 DO YOU TROUBLESHOOT MAGNETRONS	0	0	0	0	0	0
P1070 P3-37 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON	0	0	0	0	0	0
P1071 P3-38 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS	0	0	0	0	0	0
P1072 P3-39 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES	0	0	0	0	0	0
P1073 P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES	0	0	0	0	0	0
P1074 P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS	0	0	0	0	0	0
P1075 P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS	0	0	0	0	0	0
P1076 P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIFT SPACES	0	0	0	0	0	0
P1077 P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS	0	0	0	0	0	0
P1078 P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES	0	0	0	0	0	0
P1079 P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS	0	0	0	0	0	0
P1080 P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES	0	0	0	0	0	0
P1081 P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REPELLER (REFLECTOR) PLATES	0	0	0	0	0	0
P1082 P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS	0	0	0	0	0	0
P1083 P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS	0	0	0	0	0	0
P1084 P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES	0	0	0	0	0	0
P1085 P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS	0	0	0	0	0	0
P1086 P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS	0	0	0	0	0	0
P1087 P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES	0	0	0	0	0	0

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUMS PAGE 39

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

0Y-TSK

P1088	P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON OUTPUT LEADS	0	0	0	0	0	0
P1089	P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	0	0	0	0	0	0
P1090	P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	0	0	0	0	0	0
P1091	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	0	0	0	0	0	0
P1092	P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	0	0	0	0	0	0
P1093	P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELICES	0	0	0	0	0	0
P1094	P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	0	0	0	0	0	0
P1095	P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	0	0	0	0	0	0
P1096	P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	0	0	0	0	0	0
P1097	P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	0	0	0	0	0	0
P1098	P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	0	0	0	0	0	0
P1099	P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLER CAVITIES	0	0	0	0	0	0
P1100	P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR DIODES	0	0	0	0	0	0
P1101	P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	0	0	0	0	0	0
P1102	P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE-BIAS BATTERIES	0	0	0	0	0	0
P1103	P3-70 DO YOU PERFORM TASKS ON ANODES	0	0	0	0	0	0
P1104	P3-71 DO YOU PERFORM TASKS ON ANODE COOLING PINS	0	0	0	0	0	0
P1105	P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	0	0	0	0	0	0
P1106	P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	0	0	0	0	0	0
P1107	P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	0	0	0	0	0	0
P1108	P3-75 DO YOU PERFORM TASKS ON CATHODES	0	0	0	0	0	0
P1109	P3-76 DO YOU PERFORM TASKS ON MAGNETS	0	0	0	0	0	0
Q1110	Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	1	2	0	2	0	3
Q1111	Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	2	2	0	2	0	4
Q1112	Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	2	2	5	2	0	5
Q1113	Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	2	2	5	2	0	5
Q1114	Q1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	0	1	0	0	0	1
Q1115	Q1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	1	1	0	0	0	3

REGISTERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 40

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

0Y-75K

SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

Q1116 Q1-07 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A
SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES
HAVE PASSED

Q1117 Q2-01 DO YOU WORK WITH DIGITAL COUNTERS, REGISTERS, OR
STORAGE DEVICES IN YOUR PRESENT JOB

Q1118 Q2-02 DO YOU USE OR REFER TO DELAY LINES

Q1119 Q2-03 DO YOU USE OR REFER TO MAGNETIC CORES

Q1120 Q2-04 DO YOU USE OR REFER TO MAGNETIC DRUMS

Q1121 Q2-05 DO YOU USE OR REFER TO MAGNETIC TAPES

Q1122 Q2-06 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OR
MEMORY SYSTEMS

Q1123 Q2-07 DO YOU USE OR REFER TO WORD CAPACITY OF MEMORY
SYSTEMS

Q1124 Q2-08 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS

Q1125 Q2-09 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES

Q1126 Q3-01 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-
ANALOG (D/A) CONVERTERS, ANALOG-TO-DIGITAL (A/D)
CONVERTERS, OR BINARY-TO-DECIMAL READOUT CONVERTERS

Q1127 Q3-02 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL
DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT
VOLTAGES

Q1128 Q3-03 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE
COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A)
CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE
RESISTORS

Q1129 Q3-04 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY
COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS

Q1130 Q3-05 DO YOU PERFORM SAMPLE FUNCTION TASKS ON VARIABLE TIME
ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1131 Q3-06 DO YOU PERFORM HOLD FUNCTION TASKS ON VARIABLE TIME
ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1132 Q3-07 DO YOU PERFORM COMPARE FUNCTION TASKS ON VARIABLE
TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1133 Q3-08 DO YOU PERFORM DIGITIZE FUNCTION TASKS ON VARIABLE
TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1134 Q3-09 DO YOU PERFORM DON'T REMEMBER WHICH FUNCTION TASKS
ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER
CIRCUITS

Q1135 Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D
CONVERTERS

Q1136 Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D
CONVERTERS

Q1137 Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D
CONVERTERS

Q1138 Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D
CONVERTERS

Q1139 Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-
DIGITAL (A/D) CONVERTERS

STORAGE DEVICES

DIGITAL TO
ANALOG CONVERTERS

DIGITAL (A/D) CONVERTERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUMS PAGE 91

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC SPC SPC SPC
076 077 078 079 080 081

R1140 R1-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR PRESENT JOB	0	1	0	0	0	1	PHANTASTRONS
R1141 R2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER CIRCUITS	5	6	0	7	8	9	SCHMITT TRIGGERS
R1142 R2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER SCHEMATIC DIAGRAMS	3	4	0	7	3	3	
R1143 R2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS	3	4	0	7	0	3	
R1144 R3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTION CABLES	32	31	38	34	24	33	CABLE FABRICATION
R1145 R3-02 DO YOU FABRICATE COAXIAL CABLES	15	14	21	23	5	13	
S1146 S1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON VISUAL READOUT SYSTEMS	22	24	17	28	8	29	INPUT/OUTPUT DEVICES
S1147 S1-02 DO YOU PERFORM ANY TASKS ON NIXIE LIGHTS OR NIXIE LIGHT DECODER SYSTEMS	1	2	0	3	0	0	
S1148 S1-03 DO YOU ANALYZE NIXIE LIGHT DECODER SYSTEMS USING BOOLEAN ALGEBRA	0	1	0	2	0	0	
S1149 S2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB	12	15	0	28	3	1	PHOTO SENSITIVE DEVICES
S1150 S3-01 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS	16	20	0	49	0	3	
S1151 S3-02 DO YOU MEASURE EXCITATION FREQUENCIES	7	9	0	23	3	0	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)
S1152 S3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS	8	10	0	25	3	0	
S1153 S3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES	6	8	0	20	0	0	
S1154 S3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIPS	8	9	0	25	0	0	
S1155 S3-06 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	9	12	0	28	0	1	
S1156 S3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	5	6	0	15	0	1	
S1157 S3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	10	12	0	33	0	1	
S1158 S3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	8	9	0	23	0	1	
T1159 T1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS	0	0	0	0	0	0	
T1160 T1-02 DO YOU INSPECT INFRARED SYSTEMS	0	0	0	0	0	0	INFRARED
T1161 T1-03 DO YOU CLEAN INFRARED SYSTEMS	0	0	0	0	0	0	
T1162 T1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS	0	0	0	0	0	0	
T1163 T1-05 DO YOU OPERATE INFRARED SYSTEMS	0	0	0	0	0	0	
T1164 T1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS	0	0	0	0	0	0	
T1165 T1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	0	0	
T1166 T1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	0	0	
T1167 T1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	0	0	
T1168 T1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	0	0	

0Y-73K

[illegible]

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

SPC	SPC	SPC	SPC	SPC
076	077	078	079	080
081	082	083	084	085
086	087	088	089	090
091	092	093	094	095
096	097	098	099	100

Y1210 T2-25 DO YOU WORK WITH HALF SILVERED (925 REFLECTIVE) MIRRORS

11211 12-26 DO YOU WORK WITH HELICAL FLASHTUBES

Y1212 12-27 DO YOU WORK WITH RUBY

Y1213 12-28 DO YOU WORK WITH HELIUM-NEON

11214 12-29 DO YOU WORK WITH HELIUM-XENON

1215 12-30 DO YOU WORK WITH XENON

12-31 DO YOU WORK WITH CESIUM-MELIUM

11217 12-32 DO YOU WORK WITH ARGON

12-33 DO YOU WORK WITH NEODYMIUM IN GLASS

11219 12-34 DO YOU WORK WITH GALLIUM ARSENIDE

Y1220 T3-01 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE (DVS) OR MULTIPLE MODE

STORAGE TUBES (MMST)

T1281 73-02 DO YOU INSPECT DVST OR MMST

71222 13-03 DO YOU CLEAN DVST OR MNST

TI223 TJ-09 DO YOU ADJUST OR CALIBRATE DVST OR HMST

TI224 T3-05 DO YOU OPERATE SYSTEMS THAT CONTAIN OVST OR MNST

T 1225 YJ-06 DO YOU TROUBLESHOOT DVST OR

CIRCUITS

T1226 T3-07 DO YOU REMOVE OR REPLACE DVST OR MNST TUBES FROM

MAJOR ASSEMBLIES OR UNITS

TI1227 T3-08 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF DUST

T1228 TJ-09 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME

THE VARIOUS ELEMENTS OF MMSY

11229 73-10 DO YOU PERFORM TASKS ON FLOOD GUNS

71230 Y3-11 DO YOU PERFORM TASKS ON WRITE GUNS

11231 YJ-12 DO YOU PERFORM TASKS ON ATTACK GUNS

T1232 T3-13 DO YOU PERFORM TASKS ON ERASE GUNS

11222 13-19 DO YOU PERFORM TASKS ON STORAGE GRIDS

U1234 U1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING

TASKS

UI235 UI-02 DO YOU USE OR REFER TO DECIMAL SYSTEMS

U1236 U1-03 DO YOU USE OR REFER TO PROGRAMS

UI-04 DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS

U1-05 DO YOU USE ON REFER TO 8-4-2-1 SYST?

01-06 DO YOU USE OR REFER TO FOUR SYSTEMS

U1-240 U1-07 DO YOU USE OR REFER TO BINARY SYSTEMS

U1241 U1-08 00 YOU USE OR REFER TO TIME-SWARING

U1-09 60 YOU USE OR REFER TO DATA WORDS

[illegible]

UI-11	DO YOU USE OR REFER TO ADDRESS/SUBADDRESS	UI-12	DO YOU USE OR REFER TO ADDRESS/SUBADDRESS
UI-11	DO YOU USE OR REFER TO ADDRESS/SUBADDRESS	UI-12	DO YOU USE OR REFER TO ADDRESS/SUBADDRESS

UI1245 UI-12 DO YOU USE OR REFER TO STEERING/INFORMATION

11246 01-13 00 00A YOU USE OR REFER TO INFORMATION WORDS

[illegible]

U1248 01-15 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING

PCT MRS RESPONDING 'YES' BY SELECTED GRPS

QPSUMS PAGE 99

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

BY-TSK

	SPC 076	SPC 077	SPC 078	SPC 079	SPC 080	SPC 081
U1249 U1-16 DO YOU PERFORM TASKS ON INPUT DEVICES	1	1	0	2	0	1
U1250 U1-17 DO YOU PERFORM TASKS ON STORAGE DEVICES	0	1	0	2	0	0
U1251 U1-18 DO YOU PERFORM TASKS ON ARITHMETIC SECTIONS	0	0	0	0	0	0
U1252 U1-19 DO YOU PERFORM TASKS ON CONTROL SECTIONS	1	1	0	2	0	1
U1253 U1-20 DO YOU PERFORM TASKS ON OUTPUT DEVICES	0	1	0	2	0	0
U1254 U1-21 DO YOU PERFORM TASKS ON POWER SUPPLIES	1	1	0	2	0	1
U1255 U2-01 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION	4	5	0	7	3	4
U1256 U2-02 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS	0	1	0	0	0	1
U1257 U2-03 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS	0	1	0	0	0	1
U1258 U2-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED NO TASKS	0	1	0	0	0	1

DB AND POWER
RATIOS

on

AD-A046 073

AIR FORCE OCCUPATIONAL MEASUREMENT CENTER LACKLAND A--ETC F/G 5/9
AUTOMATIC FLIGHT CONTROL SYSTEMS SPECIALIST AFSC-32550.(U)
SEP 77 T J O'CONNOR, F B BOWER

UNCLASSIFIED

NL

2 OF 2
ADA
046073

SUPPLEMENTARY

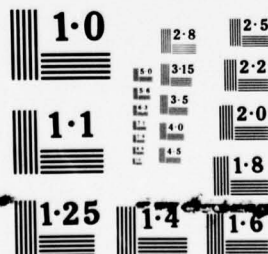
INFORMATION

END
DATE
FILMED

1-79
DDC

2 OF 2
ADA

046073



NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

SUPPLEMENTARY

INFORMATION

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Corrected

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS
BEFORE COMPLETING FORM

1. REPORT NUMBER

AFPT 90-325-222

2. GOVT ACCESSION NO.

AD A046 073 / *ASL*

3. RECIPIENT'S CATALOG NUMBER

4. TITLE (and Subtitle)

Automatic Flight Control Systems Specialist
AFSC 32550

5. TYPE OF REPORT & PERIOD COVERED

FINAL
April 77 - Jun 77

6. PERFORMING ORG. REPORT NUMBER

7. AUTHOR(s)

Thomas J. O'Connor
Frederick B. Bower, Jr.

8. CONTRACT OR GRANT NUMBER(s)

9. PERFORMING ORGANIZATION NAME AND ADDRESS

Occupational Survey Branch
USAF Occupational Measurement Center
Lackland AFB TX 7823610. PROGRAM ELEMENT, PROJECT, TASK
AREA & WORK UNIT NUMBERS

N/A

11. CONTROLLING OFFICE NAME AND ADDRESS

SAME AS ITEM 9

12. REPORT DATE

22 September 1977

13. NUMBER OF PAGES

44

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)

15. SECURITY CLASS. (of this report)

UNCLASSIFIED

15a. DECLASSIFICATION/DOWNGRADING
SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Electronic principles
Basic electronics
Avionics
Electronic equipment
Electronic techniciansElectronics
Air Force training
Teaching methods
Training

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Automatic Flight Control Systems Specialist (AFSC 32550). This report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.

CONTINUED

DD FORM 1473
1 JAN 73

EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

A046 073

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

This specialty has the following functions:

Inspects, troubleshoots, removes, repairs, installs, adjusts, and modifies automatic flight control systems, components, and test equipment. Performs inspection and maintenance on automatic flight control systems. Repairs and maintains automatic flight control systems. Supervises automatic flight control systems personnel.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)